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Evaluation of Soybean Varieties in the Northern Uniform Soybean Test—Uniform Test III

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Abstract
The Northern Uniform Soybean Test is used to evaluate soybean varieties produced by several public breeding programs in the northern portion of the United States and Canada. In 2010, five public breeding programs participated in the Northern Uniform Soybean Test (Uniform Test III). Public breeders are allowed to enter varieties into the Uniform Test in exchange for growing locations for the test. Material entered into the Uniform Test is generally in advanced stages of a breeding program. The Uniform Soybean Test is a method for soybean breeders to get multiple location data, in a very efficient manner in comparison to each individual program growing their own locations. It also produces useful information by comparing soybean lines from multiple programs, and identifies lines from other states that produce well in southern Iowa. Results from these tests are used by breeders to select varieties with superior yield and/or disease resistance to continue advancement on a trek toward variety release. These results are also used to demonstrate positive characteristics to growers and other interested parties.

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Evaluation of Soybean Varieties in the Northern Uniform Soybean Test—Uniform Test III

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Introduction

The Northern Uniform Soybean Test is used to evaluate soybean varieties produced by several public breeding programs in the northern portion of the United States and Canada. In 2010, five public breeding programs participated in the Northern Uniform Soybean Test (Uniform Test III). Public breeders are allowed to enter varieties into the Uniform Test in exchange for growing locations for the test. Material entered into the Uniform Test is generally in advanced stages of a breeding program. The Uniform Soybean Test is a method for soybean breeders to get multiple location data, in a very efficient manner in comparison to each individual program growing their own locations. It also produces useful information by comparing soybean lines from multiple programs, and identifies lines from other states that produce well in southern Iowa. Results from these tests are used by breeders to select varieties with superior yield and/or disease resistance to continue advancement on a trek toward variety release. These results are also used to demonstrate positive characteristics to growers and other interested parties.

Materials and Methods

Plots were four 17-ft rows spaced 30 in. apart and were planted at a rate of 10 seeds/foot, with two replications per variety. A variety was considered mature when 95 percent of the pods had turned brown. For each location, the center two rows of each four-row plot were harvested with a plot combine, total seed weight/plot and seed moisture were determined, and total plot seed weights subsequently were converted to bushels/acre. Seed size was determined by weighing a 200-seed sample from each plot. Seed quality scores were determined by considering the amount and degree of wrinkling, defective seed coat, level of green seed coat, and moldy or other pigment imperfections. A seed quality score of 1 = very good and 5 = very poor. Protein and oil information was provided by the USDA-ARS National Center for Agricultural Utilization Research in Peoria, IL and is based on analysis of a 25-gram sample from each plot.

Results and Discussion

The Crawfordsville location was one of 19 locations where the Uniform Test III was grown. Additional data should be used when making variety selections. The complete 2010 Northern Uniform Soybean Test report is available online at http://www.ag.purdue.edu/btny/extension/pages/extpubs.aspx under the category USDA. The AR lines entered in this test are from Silvia Cianzio's Disease Resistant Soybean Breeding Program at Iowa State University.

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Table 1. Agronomic performance and seed composition data for soybean varieties in the Northern Uniform Test III at Crawfordsville, IA in 2010.

Soybean line	Yield bu/acre	Yield rank	Maturity date	Seed size (100 g)	Seed quality	Protein %	Oil %
IA3023 (III)	49.6	7	9/29	13.5	1.0	38.6	21.8
IA3024	41.6	24	-3	14.5	2.0	37.4	21.6
IA3048 (SCN)	48.1	11	2	12.9	2.0	39.9	21.5
IA4004	51.7	4	7	14.6	2.0	40.0	20.2
IA4005	54.9	2	8	13.0	3.0	38.7	21.3
A07-626010	43.5	16	-4	14.0	1.0	39.2	20.4
A08-248015	42.0	22	-3	12.4	1.0	38.7	20.7
A08-248031	45.0	14	-2	11.2	1.0	40.9	20.0
A08-249012	41.9	23	-4	13.3	1.0	39.0	21.5
A08-350016	44.7	15	1	14.3	1.0	39.9	21.9
A08-350020	42.5	21	-3	12.2	1.0	38.9	20.6
A08-350036	48.7	9	2	14.0	1.0	39.3	20.4
A08-350042	49.8	6	5	13.2	1.0	40.2	21.5
A08-350049	42.7	19	-2	16.3	2.0	40.6	21.3
AR06-264020	47.6	12	-3	14.8	3.0	40.4	21.1
AR07-376041	42.6	20	-2	10.3	2.0	38.3	20.5
LG06-2340	45.5	13	3	13.2	2.0	38.3	21.8
LG06-2354	42.9	18	2	13.7	2.0	40.3	21.5
LG06-2866	49.1	8	5	11.0	2.0	37.3	20.4
LG06-6094	42.9	17	5	11.2	1.0	37.1	20.2
K07-1544	58.4	1	6	14.0	2.0	38.6	21.1
U05-226055	50.3	5	4	13.1	2.0	39.6	20.0
U06-100052	52.6	3	-2	13.6	1.0	41.0	19.7
U06-206737	48.6	10	6	15.7	1.0	40.5	21.1

Values presented in this table are means. The top three varieties are check varieties. Least significant difference: values are from Fisher's least significant difference test. Yield L.S.D. = 8.5.